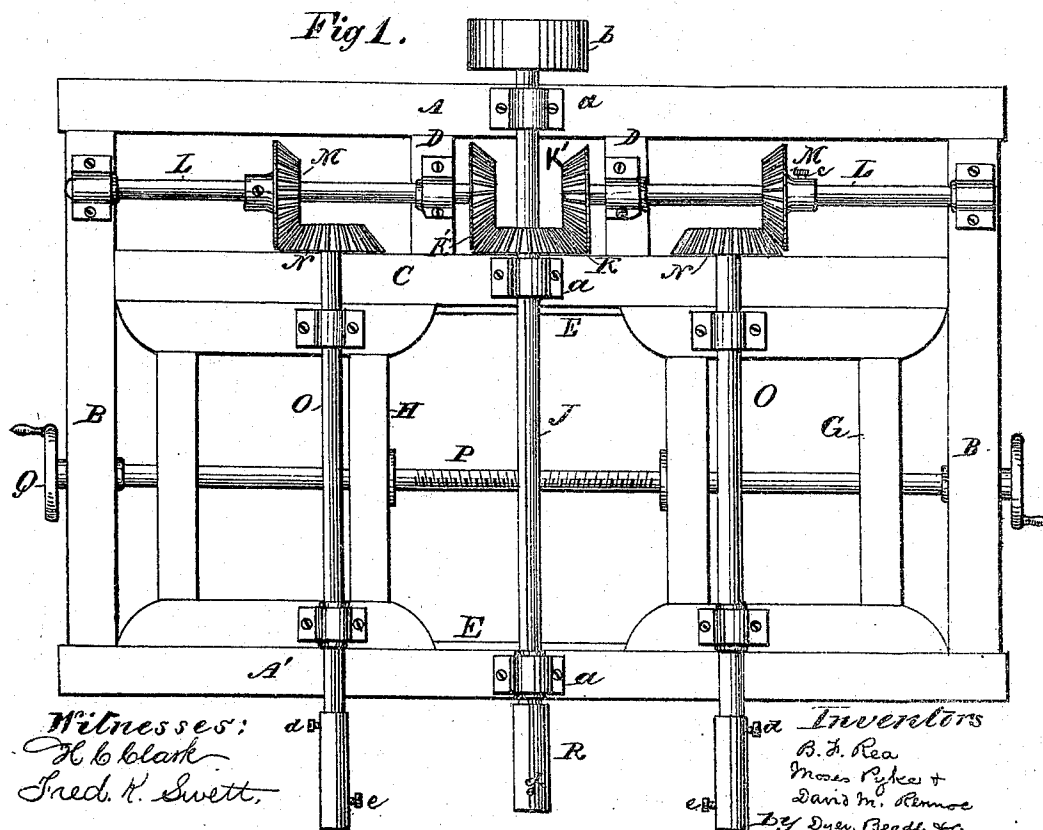
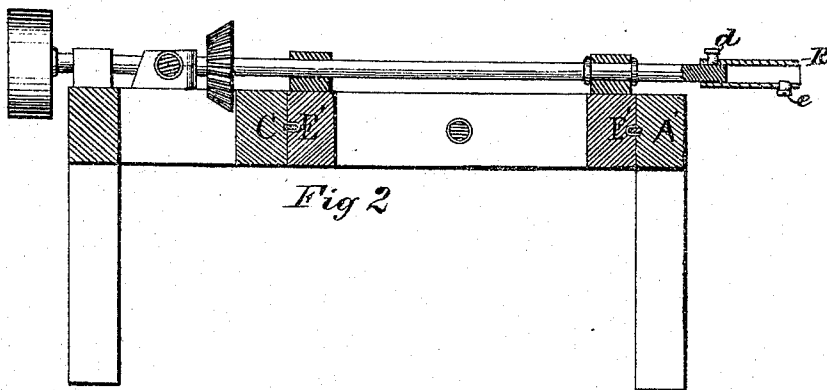


B. F. REA, M. PYKE & D. M. RENNOE.

Boring-Machines.

No. 144,139.

Patented Oct. 28, 1873.



Witnesses:
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UNITED STATES PATENT OFFICE.

BENJAMIN F. REA, MOSES PYKE, AND DAVID M. RENNOE, OF SOUTH BEND, INDIANA; SAID PYKE ASSIGNOR TO SAID REA AND RENNOE.

IMPROVEMENT IN BORING-MACHINES.

Specification forming part of Letters Patent No. **144,139**, dated October 28, 1873; application filed August 2, 1873.

To all whom it may concern:

Be it known that we, BENJAMIN F. REA, MOSES PYKE, and DAVID M. RENNOE, of South Bend, in the county of St. Joseph and State of Indiana, have invented a new and useful Improvement in Boring-Machines; and we do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The object we have in view is the construction of a machine which shall be equally convenient for boring wood or drilling metals, requiring no change for either purpose but the substitution of boring for drilling tools, or the reverse, which will make the desired number of holes at the proper distances at the same time, with means for adjustment in a simple and speedy manner; and our invention therein consists in the combination of the several essential operative parts, all constructed as more fully hereinafter explained.

In order to enable those skilled in the art to construct our machine, we proceed to describe the same in connection with the drawings, in which—

Figure 1 is a plan view of our machine, and Fig. 2 a vertical cross-section of the same in the line *xx* of Fig. 1.

Our machine is arranged upon, and in connection with, a proper supporting-frame, wherein the side beams are shown by the letters A and A', and the end beams by the letter B. Between the side beams, and nearest to the beam A, is a supporting longitudinal beam, C, and extending from this beam to the beam A are two cross-ties, D. Upon the inner sides of the beams C and A', arranged longitudinally and centrally, are guides E, upon which the sliding frames G and H, provided with corresponding grooves E', have a movement back and forth. A main shaft, J, extends centrally across the supporting-frame described, in proper bearings *a* upon the beams A, A', and C, and having at one end a driving-pulley, *b*. This shaft, extending also across the space or opening between the beams A and C, and between the cross-ties D, has secured upon it, and turning in such space, a bevel-

gear, K, with which, on either side, and within such space, a bevel-gear, K', meshes, which gear is secured upon shafts L, turning in proper bearings upon the cross-ties D and the side beams B. Each of these shafts last named has upon it a bevel-gear, M, which slides back and forth on such shaft, and is secured in position thereon by a set-screw, *c*. These bevel-gears, in turn, engage with other bevel-gears, N, secured upon the ends of the shafts O, which shafts turn in proper bearings secured upon the sliding frames G and H. An adjusting screw-rod, P, passing through each side beam B, and through each sliding frame, and having suitable hand-wheels Q at the outer ends, provides means of adjustment in position for such frames and the shafts O. Bit-sockets R, composed of metallic tubes, fitting closely over the ends of the shafts J and O O, and capable of movement out and in upon such shafts, and secured in place by set-screws *d*, Fig. 2, upon their inner ends, and having upon their outer ends set-screws *e*, by means of which to hold the boring or drilling tools, complete the enumeration of the parts of our machine.

In the operation of our machine, should it be desired to adjust the shafts O O to a particular distance from the central shaft J, the bevel-gears M are loosened by turning the set-screws *c*, and moved to one side. By means of the screw-rod P the proper frame is moved upon its guides until the shaft O is in the desired position. The gear M is then moved along its shaft until it meshes with the gear N. When power is applied through a band to the pulley *b*, the whole train of bevel-gears is rotated in the same direction, and at the same speed, and the boring or drilling is effected uniformly, and in the same line of direction upon the article bored or drilled.

If the drilling or boring is to be made of various depths, or upon objects not having the same plane, a proper adjustment may be made by moving the boring-bits out or in upon their respective shafts.

The advantages of our machine, consisting in the simplicity and effectiveness of arrangement and construction, are apparent upon inspection.

We are aware of the patent of C. R. Long, dated September 1, 1868, and do not claim the features shown therein.

Having thus described our machine, what we claim as new therein and our invention is—

The combination of the shafts J and O O, provided with the bit-holders, with their respective bevel-gears, the frames G and H, and the adjusting-screws P, the several parts con-

structed and arranged substantially as described, for the purpose set forth.

This specification signed and witnessed this 25th day of July, 1873.

BENJAMIN F. REA.

MOSES PYKE.

DAVID M. RENNOE.

Witnesses:

ALX. H. THOMAS,

C. HARTMAN.